AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Listing of claims:

1. – 19. (Cancelled)

20. (New) An adaptive linear system to adapt a set of complex valued observations having adaptation parameters with complex-valued elements, comprising:

a complex Least Square Solver (LESS), having:

means for transforming adaptation observations from a complex arithmetic to two sets of real number arithmetic observations by means of binary orthogonalization transformation (BOT);

means for computing with two real number LESS two sets of real number arithmetic adaptation parameters; and

means for transforming after said computing with LESS said two sets of real adaptation parameters to a set of complex number arithmetic adaptation parameters using an inverse binary orthogonalization transform (IBOT).

21. (New) The adaptive linear system as described in claim 20, wherein said means of computing of said two sets of real number LESS are applied in parallel.

22. (New) The adaptive linear system as described in claim 20, wherein said means of computing of said two sets of real number LESS are applied in series.

23. (New) The adaptive linear system as described in claim 20, wherein the LESS represents a Recursive Least Squares algorithm (RLS).

24. (New) The adaptive linear system as described in claim 20, wherein the LESS represents a Least Mean Squares (LMS) algorithm.

25. (New) The adaptive linear system as described in claim 20, wherein said LESS is a Householder transformation.

26. (New) The adaptive linear system as described in claim 20, wherein said LESS is a Cholesky decomposition.

27. (New) The adaptive linear system as described in claim 20, wherein said LESS is QR Decomposition (QRD).

28. (New) The adaptive linear system as described in Claim 23, wherein the RLS is computed by a systolic array.

29. (New) The adaptive linear system as described in claim 20, wherein the LESS represents the group consisting of a Block Matched Filter Estimator (BMFE), a Block Zero Forcing Estimator (BZFE), and a Block Minimum Mean Square Error Estimator (BMMSEE).

30. (New) The adaptive linear system as described in claim 20, wherein the group is computed through the group consisting of a Cholesky decomposition and a QR Decomposition (QRD).

31. (New) The adaptive linear system as described in claim 20, wherein said LESS is constrained as CLESS in that an initial BOT from complex number arithmetic to real number arithmetic is used; then two real computation, Constrained Least Square Solver, (CLESS) are applied, each one producing P output streams; and finally a corresponding number of P IBOT modules from real number arithmetic to complex number arithmetic are implemented.

32. (New) The adaptive linear system as described in claim 20, wherein said linear system is applied for the group consisting of temporal, spatial, joint temporal and spatial channel estimation.

33. (New) The adaptive linear system as described in claim 20, wherein said linear system is applied for the group consisting of temporal, spatial, joint temporal and spatial channel equalization.

34. (New) The adaptive linear system as described in claim 20, wherein said linear system is applied for carrier frequency estimation.

35. (New) The adaptive linear system as described in claim 20, wherein said linear system is an adaptive filter.

36. (New) The adaptive linear system as described in claim 20, wherein said adaptive linear system is selected from the group consisting of channel estimation, system parameter estimation, channel equalization, recursive updating of output parameters, non-recursive updating of output parameters, and system identification.